congratulations are to be extended to Dr. Britton, to whom the chief labor has fallen, upon the accomplishment of a task fitting in every way to be a permanent record of his life-long study of our flora.

NORMAN TAYLOR

PROCEEDINGS OF THE CLUB

APRIL 30, 1913

The meeting of April 30, 1913, was held in the laboratory of the New York Botanical Garden at 3:30 P.M. Vice-president Barnhart occupied the chair. Eighteen persons were present.

The minutes of March 26 and April 8 were read and approved.

The Committee on Exchanges, consisting of Dr. W. D. Johnston and Dr. J. H. Barnhart, submitted their annual report, which was adopted. The report showed that the following exchanges had been arranged for 1912–1913:

Bulletin	3
TORREYA	1
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The resignations of Mrs. A. D. Russell and Mrs. Wm. Mitchell were read and accepted.

Dr. Barnhart announced the death of Hon. Addison Brown who was at one time President of the Club. On the motion of Dr. Britton a committee consisting of Prof. E. S. Burgess, Dr. H. H. Rusby, and Dr. J. K. Small was appointed with power to prepare a suitable memorial of Judge Brown.

The first number on the announced scientific program consisted of a paper on "Local Flora Notes" by Mr. Norman Taylor. Mr. Taylor gave a short account of his studies on the relationship of the flora of Long Island, Staten Island, and the New Jersey pine-barrens. Lists of species were given that are found only on Long Island and the New Jersey Coastal plain but not on Staten Island, and also lists of plants found on Staten Island but not on Long Island. Mention was also made by the speaker of the discovery by Miss Mulford at Arkville of the musk-root.

Mr. Taylor also spoke briefly of a recent visit to Alphano, Warren Co., N. J., where a corporation is engaged in the exploitation of the sediment of an inter-glacial lake, the old bed of which is covered by a deposit of muck or humus, which is not sour and yields a large amount of plant food. Mention was made of the great phytogeographic interest of the spot, and a field trip to the locality was suggested.

The second paper was given by Prof. H. M. Richards on "Respiration and Acidity in *Cacti*."

In common with many other succulents cacti show a high acidity. The acids present are considered to be malic or isomalic. It has been known that this acidity diminishes during the day and increases at night. The maximum is just before sunrise and the minimum at about five o'clock in the afternoon when the temperature and light are lessening in intensity. In comparison with the diurnal temperature curve with the cactus joint that of the acidity is very nearly the reverse. But the fall in acidity is not due to a temperature effect alone, as is shown by the exposure of the cacti to bright sunlight at a constant and relatively low temperature when there is a marked diminution in the acidity. In atmospheres with increased partial pressure of oxygen the acidity diminishes more rapidly while in atmospheres devoid of oxygen it usually remains stationary or even increases.

The highest acidity found was where the pure juice was equivalent to nearly one fifth normal alkali. The greatest extremes between day and night showed the acidity at its minimum to be approximately one tenth of its maximum strength. There are considerable individual differences in different plants and the range of acidity is by no means always so great. Long joints still bearing leaves showed the highest acidity. Old turgid joints differed very little whether one, two, or three years old. Old flaccid joints showed the lowest acidity.

The respiration is naturally greatly affected by the rising temperature. It is highest at between 45° and 50° C. after which the CO_2 evolution gradually falls off and practically ceases above 60° C. The evolution of CO_2 after the maximum may

very well be simply due to the driving off of imprisoned gas. The respiration curve lags behind the temperature curve from an hour to an hour and a half. Even in bright sunlight there is still a considerable evolution of CO_2; at least when the temperature is above 40° C. It is well known that in the gas interchange succulents in general show a correspondingly lower absorption of oxygen than evolution of carbon dioxide. This is especially true of the older joints while the younger ones seem to behave more like ordinary plants in regard to the CO_2/O_2 ratio. But external conditions affect the relative amounts of gases involved. In general at higher temperatures the ratio is more nearly 1/1, while at lower temperatures the carbon dioxide evolution rapidly decreases, though the oxygen consumption remains nearly stationary. This part of the work is being done by Miss M. E. Latham and a large amount of data has been secured but not yet reduced for comparison. *Opuntia versicolor* was mainly employed because it happens to be especially favorable for experimental purposes, but other forms were used in part. The work has been partly carried on in New York and partly at Tucson, Arizona.

Meeting adjourned.

B. O. Dodge,
Secretary.

NEWS ITEMS

It is stated in *Österreichische Botanische Zeitschrift* (May) that Professor Dr. Hans Molisch, director of the Plant Physiology Institute at the University of Vienna, has been invested with the Order of the Iron Crown.

C. R. Orcutt, of San Diego, California, sailed for Mazatlan, Mexico, July 2, 1913, and plans to make botanical collections during the season in Lower California.

The following descriptive floras have just been issued by Dr. J. K. Small: Flora of the Southeastern United States: Second Edition, revised and enlarged. Flora of Miami: Contains descriptions of the seed-plants growing naturally in the Everglades,